

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Notice of Proposed Rulemaking)	
18 FCC Rcd 13187, 13188 ¶1 (2003))	ET Docket No. 03-137
)	
And)	
)	
Service Rules for the Advanced Wireless Services)	WT Docket No. 12-357
H Block---Implementing Section 6401 of the)	
Middle Class Tax Relief and Job Creation Act of)	
2012 Related to the 1915-1920 MHz and)	
1995-2000 MHz Bands ¶53 footnote 95)	

To: Office of the Secretary
Federal Communications Commission
Washington, DC 20554

Comment Filed by: Dr. Magda Havas, B.Sc., Ph.D.
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February 3, 2013

AFFIDAVIT OF DR. MAGDA HAVAS

I, Magda Havas, attest that my statements are true to the best of my knowledge.

Comment round for ET Docket No. 03-137 and WT Docket No. 12-357.

1. My name is Magda Havas. My address is 304 Woodward, Ave, Peterborough, ON, Canada.
2. I am an Associate Professor at Trent University, Peterborough, ON, Canada where I teach and do research on the biological effects of non-ionizing electromagnetic energy. I also work with people who have developed sensitivity to electromagnetic frequencies.
3. Biological effects as well as adverse health effects of radio frequency radiation, especially in the microwave band (300 MHz to 300 GHz), have been documented since our use of radar. **Dr. Zory Glaser**, who worked at the U.S. Naval Medical Research Institute and later for the FDA and other federal agencies, was among the first to review this literature. Glaser noted adverse effects that occurred below existing guidelines in his 1972 review paper entitled "*Bibliography of reported biological phenomena ('Effects') and clinical manifestations attributed to microwave and radio-frequency radiation,*" Report No. 2 Revised, MF12.524.015-0004B, Report Distributed by National Technical Information Services, U.S. Department of Commerce, Springfield, VA), 25pp. This document is available at www.magdahavas.com/pick-of-the-week-1-more-than-2000-documents-prior-to-1972-on-bioeffects-of-radio-frequency-radiation/. Other documents from Dr. Glaser's library are available at www.magdahavas.com. In one report of which only 15 copies were produced (IDA/HQ 67-6211 Series B) , **Pollack and Healer (1967)** told the U.S. Military that their guidelines were too high and that they should approach the Soviet guidelines to protect the public. At that time the American guidelines were 10,000 $\mu\text{W}/\text{cm}^2$ and the USSR standards ranged from 3 to 13 $\mu\text{W}/\text{cm}^2$ based on frequency. Today the USSR standards have not changed appreciably but the U.S. guideline is 10 times lower (1000 $\mu\text{W}/\text{cm}^2$) than it was back in the 1960s. It is still 100 times higher (less protective) than the Russian standard!

4. The **key non-thermal effects** documented in [Glaser 1972](#) are changes in physiologic function, central nervous system effects, autonomic nervous system effects, peripheral nervous system effects, psychological disorders, behavioral changes in animals studies, blood disorders, vascular disorders, enzyme and other biochemical changes (in vitro), metabolic disorders, gastro-intestinal disorders, histological changes, genetic and chromosomal changes, per chain effect and miscellaneous effects such as metallic taste in mouth, tinnitus, etc.

5. What was then referred to as *microwave sickness* is now called ***electrosensitivity*** ([Bevington, M. 2010](#). *Electromagnetic-Sensitivity and Electromagnetic-Hypersensitivity (also known as asthenic syndrome, EMF intolerance syndrome, Idiopathic Environmental Intolerance-EMF, Microwave Syndrome, Radio Wave Sickness)-A summary*. Capability Books, ISBN: 978-1-872072-20-3, 43 pp. According to one report ([Hallberg and Oberfeld 2006](#)) by 2017, 50% of the population in developed countries is likely to complain of symptoms of electrosensitivity. I believe that approximately 3% of the population in the United States (10 million people) is severely sensitive to electromagnetic energy and another 30% (100 million people) has mild to moderate symptoms. This places an enormous stress on the health care system and on families, it reduces the effectiveness of the workforce, it interferes with learning at school, and it impairs the quality of life.

6. The [IARC \(WHO\) 2011](#) classified radio frequency electromagnetic fields as a possible human carcinogen (**Class 2b carcinogen**) in May 2011. A few year earlier they classified extremely low frequency electromagnetic fields as a Class 2b carcinogen based on childhood leukemia studies with elevated exposure to residential magnetic fields. The “elevated” exposure in this case was at **3 to 4 mG**. The international guideline for low frequency magnetic fields allows 24-hour exposure to **1000 mG**!

7. Studies, including the [INTERPHONE](#) study document an increase in ipsilateral tumors associated with the head (gliomas, salivary gland tumors, acoustic neuromas) for

those who use a **cell phone** for 10 years or more for a cumulative exposure of more than 1640 hours with statistically significant odds ratios ranging from 1.4 to more than 3. These studies were conducted when cell phone use was not as prevalent as it is today.

8. Studies in Germany, Israel, and Brazil) document an increase in various types of cancers for those people who live within 400-500 meters from **cell phone base stations**. In the Brazil study ([Dode et al. 2011](#)) the highest level of exposure measured was **40 $\mu\text{W}/\text{cm}^2$** . Other studies ([Santini et al. 2002](#)) document ill health with more headaches, fatigue, sleep disturbances, mood disorders, cognitive dysfunction, within 300 meters of cell phone base stations. Still other studies ([Eskander et al. 2010](#)) document hormonal changes (testosterone, thyroid hormones, ACTH, cortisol) that are observed for those who live within 500 meters of cell base stations within 6 years. In none of these studies are the FCC levels exceeded!

9. The adverse effects of frequency radiation generated by broadcast antennas has also been documented and generally the area of effect is within 2 km radius from the antennas. In one study ([Magras and Xenos 1997](#)), mice exposed to an antenna farm became irreversible infertile within 5 generations. Power densities ranged from **0.168 to 1.053 $\mu\text{W}/\text{cm}^2$** and these vales are well below the FCC guideline.

10. The **2012** version of [the BioInitiative Report](#) reviews thousands of such documents indicating DNA damage, altered calcium flux, increased permeability of the blood-brain-barrier and host of physiological changes that include decrease in antioxidants, decrease in hormones and neurotransmitters, effects on sperm, etc.

11. My own research ([Havas et al. 2010](#)) shows that radiation from a cordless phone base station (2.4 GHz) affects the heart of sensitive individuals causing either a rapid or an irregular heart rate. In some cases the heartbeat changed from 65 bpm to 120 bpm while the person was lying down and blindly exposed to the radiation from a cordless phone base at levels that are **3 $\mu\text{W}/\text{cm}^2$ (0.3% of the FCC guidelines)**! In this double blind, case-controlled, peer-reviewed study we also document an up regulation of the

sympathetic nervous system and a down regulation of the parasympathetic nervous system that is the “fight or flight” stress response.

12. A growing number of students in schools with **Wi-Fi** are complaining of racing heart and feelings of weakness and anxiety and confusion. There is also an increase in out of hospital sudden cardiac arrest among young people following exercise. In Ontario, schools are installing defibrillators because of the increase in heart problems among students. More information is available at www.safeschool.ca. U.S. cardiologist Dr. Stephen Sinatra believes the heart problems are associated with minor undiagnosed heart abnormalities, combined with exercise and microwave radiation producing the “perfect storm.”

13. **Guidelines** globally for microwave radiation range from **10,000 to 0.01 $\mu\text{W}/\text{cm}^2$** . Indeed the U.S. guidelines have been lowered from **10,000 to 1,000** and it is time to lower them again based on the numerous scientific studies documenting adverse biological and health effects. We have several international associations of doctors and scientists asking that international guidelines be reduced. A list of them is available at www.magdahavas.com/international-experts'-perspective-on-the-health-effects-of-electromagnetic-fields-emf-and-electromagnetic-radiation-emr/. These include but are not limited to the 1997 Boston Physicians' and Scientists' Petition; 2000 Stewart Report, UK; 2002 Salzburg Resolution, Austria; 2002 Freiburg Appeal, Germany; 2002 Catania Resolution, Italy; 2005 Irish Doctors' Environmental Association; 2005 Helsinki Appeal, Finland; 2006 Benevento Resolution, Italy; 2007/2012 BioInitiative Report, U.S.; 2008 Venice Resolution, Italy; 2009 Porto Alegre Resolution, Brazil; 2009 EU Parliament Electromagnetic Report and Resolution; 2010 Seletun Statement, Norway; 2011 Russian National Committee on Non-Ionizing Radiation Protection; 2011 Parliamentary Assembly Council of Europe (PACE); 2012 International Doctors' Appeal; 2012 Austrian Medical Association Guidelines for electrosensitivity, Austria.

14. Guidelines be established for **Intermediate Frequencies (IF)** in the kHz range that travel along electrical wires and produce “dirty electricity” or “poor power quality”.

IEEE 519 needs to be enforced as this radiation not only damages sensitive equipment but also affects human health. High levels of dirty electricity have been associated with cancer, multiple sclerosis, elevated blood sugar among diabetics, and symptoms of electrosensitivity (pain, fatigue, cognitive dysfunction, mood disorders, etc.). On farms dirty electricity reduces milk production in dairy cows, affects reproduction and leads to premature death of livestock. See studies by Dr. [Sam Milham](#), including his book, Dirty Electricity; papers by [Havas](#) on MS and Diabetes and school studies; papers by [Hillman and Stetzer](#) on ground current on farms. [NOTE: I can provide these studies, if requested, as well as the other studies I cite in this Affidavit.]

15. In addition to the guidelines for radio frequency radiation being reduced, it is also imperative that devices not be allowed to emit **constant radio frequency radiation** as is happening now in the U.S. Cordless phone base stations, wireless baby monitors, Wi-Fi routers, Wii games, wireless home protection systems, as well as some smart meters and “smart” appliances are bathing homes with microwave radiation 24/7. In Europe the cordless phones emit radiation ONLY when they are being used. The wireless baby monitors are VOICE-ACTIVATED and the infant is exposed only for short periods during the day.

16. Recommendations: It is critical that . . .

16.1 **levels of radio frequency radiation** (guidelines) be based on the duration of exposure and that for more than 8 hours/day exposure guidelines be reduced to values that are less than $1 \mu\text{W}/\text{cm}^2$ outdoors and less than $0.01 \mu\text{W}/\text{cm}^2$ indoors.

16.2 guidelines be established for **intermediate frequencies** (kHz range) or “dirty electricity” based on health-effects research on humans and livestock.

16.3 white zones or **radiation-free zones** be established to protect those who are sensitive to this energy, especially in schools, hospitals and public transit (like smoke-free environments).

16.4 **equipment** that emits **constant radio frequency radiation** be banned and replaced with equipment that broadcasts only when used (cordless phones and

voice active baby monitors for example) or communicates via shielded cable (internet access) rather than through the air.

16.5 **appliances** (freezers, air conditioners, etc.) that emit radio frequency radiation to talk with the smart meter be discontinued and be replaced with appliances that communicate with the **smart meter** via **shielded cable**.

16.6 individuals be allowed to protect their homes from **external sources of radio frequency exposures** (cell phone antennas, neighbor's Wi-Fi) by having the offending wireless devices replaced by a wired device or by asking the owner of the source of the radiation to provide shielding that prevents **trespassing** of this radiation onto neighboring property.

Respectfully submitted by

A handwritten signature in black ink, appearing to read 'M. Havas', with a stylized flourish at the end.

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February, 3, 2013.